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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/079,876 | 02/22/2002 | Dominique Bayart | Q68333 | 7879 |

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EXAMINER

HUGHES, DEANDRA M

ART UNIT PAPER NUMBER

3663

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/079,876

Applicant(s)

BAYART ET AL.

Examiner

Deandra M Hughes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/22/02.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 7-8, 11, 13, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Anthon (US 6,411,762 filed Nov. 23, 1999).

**The references to the prior art made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

With regard to claim 1, Anthon discloses a rare-earth doped fiber amplifier comprising:

- a double-clad fiber (col. 1, line 11; fig. 1) comprising a core (#12) having a first refractive index (n_1);
- an inner cladding (#14) surrounding the core and having a second refractive index (n_2) lower than the first refractive index ($n_2 < n_1$; fig. 1) and an outer cladding (#16) surrounding the inner cladding (#14);
- said core being doped with Erbium, co-doped with Ytterbium (col. 4, line 61), and further co-doped with Cerium (col. 5, lines 1-3).

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With regard to claim 2, cladding pumping is disclosed (col. 7, lines 60-65).

With regard to claim 3, a pump wavelength of 950nm is disclosed (col. 14, line 44).

With regard to claim 4, a pump of 975nm is disclosed (col. 15, line 39).

With regard to claims 7 and 16, the core is made of silica glass (col. 3, line 54).

With regard to claim 8, holes for directing light to fiber core are disclosed (fig. 3b).

With regard to claim 11, the amplifier is intended for the 1550nm band (col. 4, line 4).

With regard to claim 13, Anthon discloses a double-clad (col. 1, line 11; fig. 1) fiber comprising:

- a core (fig. 1, #12) having a first refractive index (n_1);
- an inner cladding (#14) surrounding the core and having a second refractive index (n_2) lower than the first refractive index (n_1) and an outer cladding (#16) surrounding the inner cladding (#14);
- the core being doped with Erbium, co-doped with Ytterbium (col. 4, line 61), and further co-doped with Cerium (col. 5, lines 1-3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 5-6, 9-10, 14-15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anthon (US 6,411,762 filed Nov. 23, 1999) in view of Simondi-Teisseire et al. (Room-Temperature CW Laser Operation at $\sim 1.55 \mu\text{m}$ (Eye-Safe Range) of Yb:Er and Yb:Er:Ce:Ca₂Al₂SiO₇ Crystals, 1996).

With regard to claims 5-6 and 14-15, Anthon does not specifically disclose the energy-levels of Er³⁺, Yb³⁺, and Ce³⁺. However, Simondi-Teisseire teaches these well known energy-levels (fig. 2). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to pump the doped fibers to the claimed energy levels for the advantage of inducing stimulated emission of the photons within the desired operating bands.

With regard to claims 9-10 and 17-18, Anthon does not specifically disclose the claimed dopant concentrations. However, Simondi-Teisseire teaches the claimed dopant concentrations (pg. 2005, col. 1, lines 17-19). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use the taught dopant concentrations for the advantage of optimizing amplification of the channels in the operating band.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anthon (US 6,411,762 filed Nov. 23, 1999).

Anthon does not specifically disclose that the optical amplifier operates in the L-band (1565nm to 1610nm). However, Anthon teaches optimization of the amplification band by varying the amplifying parameters (col. 3 lines 60-67). It would have been

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obvious to one of ordinary skill in the art (e.g., an optical engineer) to optimize the amplifier for operation in the L-band for the advantage of wider bandwidth amplification.

Information Disclosure Statement

6. The information disclosure statement (IDS) filed on Feb. 22, 2002 has been considered by the examiner.

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the refractive index profile of the core/cladding layers of the fiber (e.g. see Anthon: US 6,411,762 fig. 1) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Further, the figure 1 is objected to because the reference, DCF, is known in the art as a Dispersion Compensating Fiber. The Examiner recommends that applicant spell out the reference DCF in its entirety, i.e. Double Clad Fiber, to avoid any confusion with a dispersion compensating fiber.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Anthon, Bayart, Keur, Kubota, Mackechnie, Kamebayashi, and Norwood disclose double clad amplifying fibers doped with Cerium.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Deandra M Hughes
Examiner
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